

# Администрирование сетевых подсистем

## Лабораторная работа №4

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Авдадаев Джамал Геланиевич

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Российский университет дружбы народов, Москва, Россия

## Цель работы

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## Основная цель

Приобретение практических навыков по установке, настройке и анализу работы HTTP-сервера Apache, а также конфигурированию виртуального хостинга и подготовке окружения для автоматизации развёртывания.

## Ход выполнения

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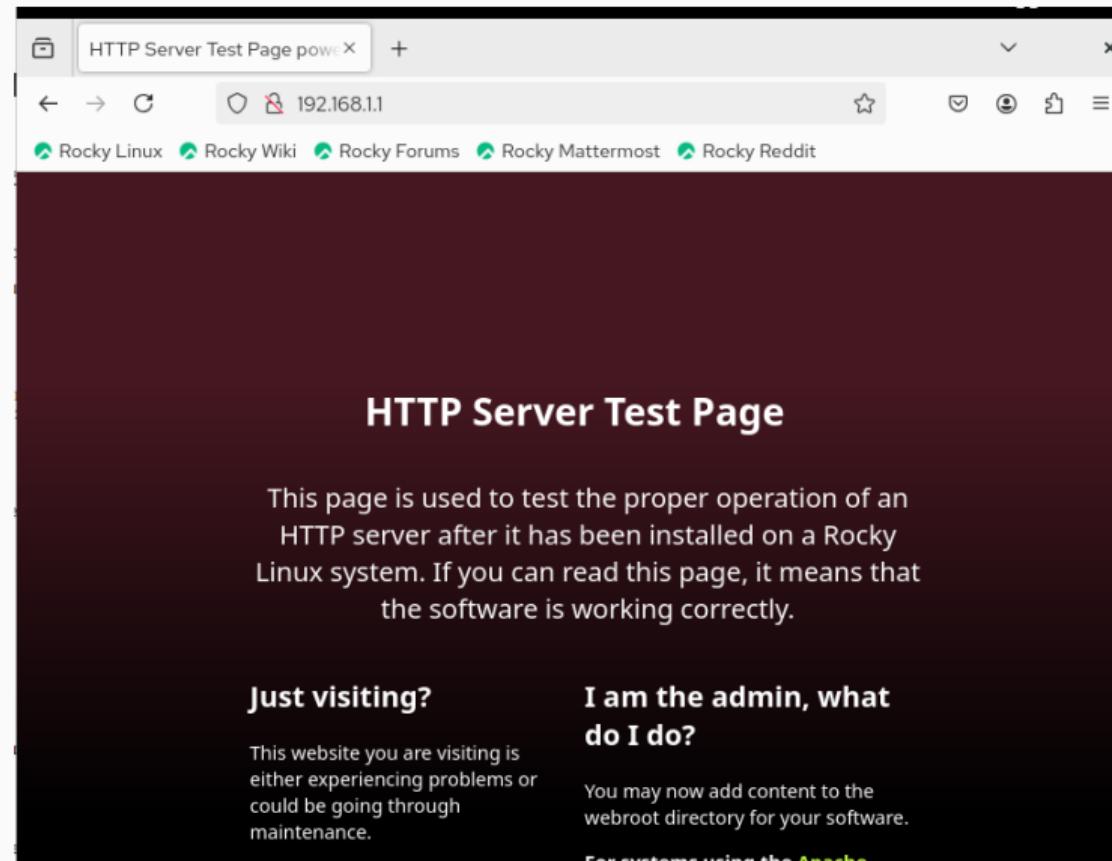
# Установка пакетов Apache

```
Installed:
apr-1.7.5-2.el10.x86_64           apr-util-1.6.3-21.el10.x86_64          apr-util-lmdb-1.6.3-21.el10.x86_64
apr-util-openssl-1.6.3-21.el10.x86_64   httpd-2.4.63-4.el10.x86_64        httpd-core-2.4.63-4.el10.x86_64
httpd-filesystem-2.4.63-4.el10.noarch  httpd-manual-2.4.63-4.el10.noarch    httpd-tools-2.4.63-4.el10.x86_64
mod_fcgid-2.3.9-35.el10.x86_64       mod_http2-2.0.29-3.el10.x86_64      mod_lua-2.4.63-4.el10.x86_64
mod_ssl-1:2.4.63-4.el10.x86_64       rocky-logos-httpd-100.4-7.el10.noarch

Complete!
[root@server.dgavdadaev.net ~]#
[root@server.dgavdadaev.net ~]# ls /etc/httpd/conf
httpd.conf  magic
[root@server.dgavdadaev.net ~]# ls /etc/httpd/conf.d/
autoindex.conf  fcgid.conf  manual.conf  README  ssl.conf  userdir.conf  welcome.conf
[root@server.dgavdadaev.net ~]#
```

Рис. 1: Установка пакетов Apache

## Тестирование с клиентской машины



## DNS: прямая зона

The screenshot shows a window titled "dgavdadaev.net" with the path "/var/named/master/fz". The window has "Open", "Save", and "+" buttons at the top. The zone file content is as follows:

```
1 $ORIGIN .
2 $TTL 86400      ; 1 day
3 dgavdadaev.net      IN SOA dgavdadaev.net. server.dgavdadaev.net. (
4                                2025112601 ; serial
5                                86400       ; refresh (1 day)
6                                3600        ; retry (1 hour)
7                                604800     ; expire (1 week)
8                                10800      ; minimum (3 hours)
9
10                               NS dgavdadaev.net.
11                               A 192.168.1.1
12 $ORIGIN dgavdadaev.net.
13 $TTL 1200      ; 20 minutes
14 client          A 192.168.1.30
15                  DHCID ( AAEBsxPzpR1LCNUbs3GeP/UYQzT2aXUpiLLYhVp/Wd10
16 pAU= ) ; 1 1 32
17 $TTL 86400      ; 1 day
18 dhcp            A 192.168.1.1
19 ns              A 192.168.1.1
20 server          A 192.168.1.1
21 www             A 192.168.1.1
22 |
```

Рис. 4: Файл прямой зоны

## DNS: обратная зона

The screenshot shows a software interface for managing DNS configurations. The title bar indicates the IP address **192.168.1** and the file path **/var/named/master/rz**. The main area displays the **named.conf** file content:

```
1 $ORIGIN .
2 $TTL 86400      ; 1 day
3 1.168.192.in-addr.arpa  IN SOA 1.168.192.in-addr.arpa. server.dgavdadaev.net. (
4                               2025112601 ; serial
5                               86400      ; refresh (1 day)
6                               3600       ; retry (1 hour)
7                               604800    ; expire (1 week)
8                               10800     ; minimum (3 hours)
9 )
10                      NS   1.168.192.in-addr.arpa.
11                      A    192.168.1.1
12                      PTR  server.dgavdadaev.net.
13 $ORIGIN 1.168.192.in-addr.arpa.
14 1                      PTR  server.dgavdadaev.net.
15                      PTR  ns.dgavdadaev.net.
16                      PTR  dhcp.dgavdadaev.net.
17                      PTR  www.dgavdadaev.net.
18 $TTL 1200      ; 20 minutes
19 30                     PTR  client.dgavdadaev.net.
20                     DHCID ( AAEBsxPzpR1LCNUbs3GeP/UYQzT2aXUpiLLYhVp/Wd10
21                                         pAU= ) ; 1 1 32
```

Рис. 5: Файл обратной зоны

The screenshot shows a text editor window with the title bar "server.dgavdadaev.net.conf" and the path "/etc/httpd/conf.d". The editor has three buttons: "Open", a dropdown arrow, and a "+" icon. The main area contains the following Apache configuration code:

```
1 <VirtualHost *:80>
2     ServerAdmin webmaster@dgavdadaev.net
3     DocumentRoot /var/www/html/server.dgavdadaev.net
4     ServerName server.dgavdadaev.net
5     ErrorLog logs/server.dgavdadaev.net-error.log
6     CustomLog logs/server.dgavdadaev.net-access_log common
7 </VirtualHost>
```

Рис. 6: Конфигурация server



The screenshot shows a text editor window with the title bar "www.dgavdadaev.net.conf" and the path "/etc/httpd/conf.d". The editor interface includes buttons for "Open", a dropdown menu, and a "+" button. The main area contains the following configuration code:

```
1 <VirtualHost *:80>
2     ServerAdmin webmaster@dgavdadaev.net
3     DocumentRoot /var/www/html/www.dgavdadaev.net
4     ServerName www.dgavdadaev.net
5     ErrorLog logs/www.dgavdadaev.net-error.log
6     CustomLog logs/www.dgavdadaev.net-access_log common
7 </VirtualHost>
```

Рис. 7: Конфигурация www

# Веб-контент и структура каталогов

```
[root@server.dgavdadaev.net conf.d]# touch index.html
[root@server.dgavdadaev.net conf.d]# cd /var/www/html/
[root@server.dgavdadaev.net html]# mkdir server.dgavdadaev.net
[root@server.dgavdadaev.net html]# cd server.dgavdadaev.net/
[root@server.dgavdadaev.net server.dgavdadaev.net]# touch index.html
[root@server.dgavdadaev.net server.dgavdadaev.net]# echo "Welcome to the server.dgavdadaev.net server." > index.html

[root@server.dgavdadaev.net server.dgavdadaev.net]# cd ..
[root@server.dgavdadaev.net html]# mkdir www.dgavdadaev.net
[root@server.dgavdadaev.net html]# cd www.dgavdadaev.net/
[root@server.dgavdadaev.net www.dgavdadaev.net]# echo "Welcome to the www.dgavdadaev.net server." > index.html
[root@server.dgavdadaev.net www.dgavdadaev.net]# chown -R apache:apache /var/www
[root@server.dgavdadaev.net www.dgavdadaev.net]# restorecon -vR /etc
Relabeled /etc/NetworkManager/system-connections/eth1.nmconnection from unconfined_u:object_r:user_tmp_t:s0 to unconfined_u:object_r:NetworkManager_etc_rw_t:s0
Relabeled /etc/named.conf from unconfined_u:object_r:etc_t:s0 to unconfined_u:object_r:named_conf_t:s0
[root@server.dgavdadaev.net www.dgavdadaev.net]# restorecon -vR /var/named/
[root@server.dgavdadaev.net www.dgavdadaev.net]# restorecon -vR /var/www/
[root@server.dgavdadaev.net www.dgavdadaev.net]# systemctl restart httpd
[root@server.dgavdadaev.net www.dgavdadaev.net]# █
```

Рис. 8: Каталоги веб-контента

## Страницы виртуальных хостов

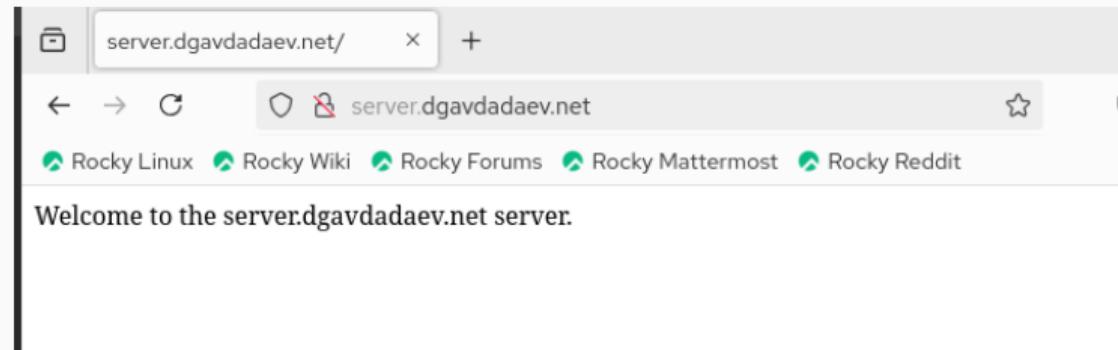
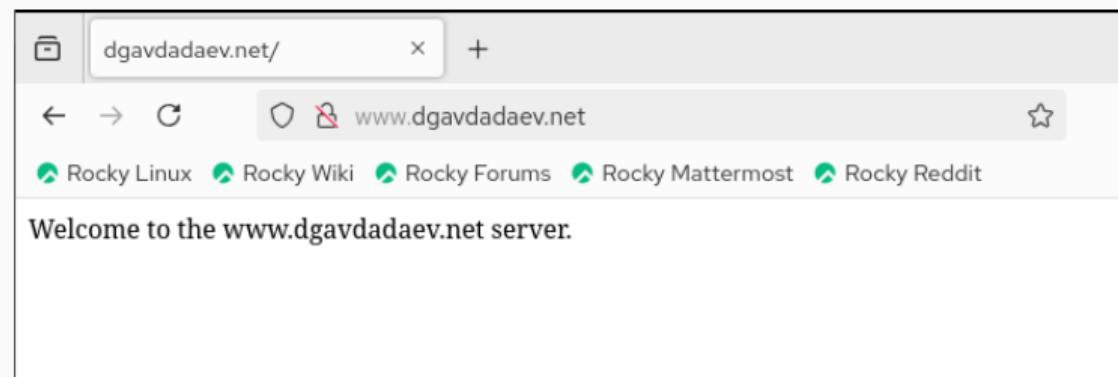


Рис. 9: server.dgavdadaev.net



## Создание структуры provision

```
[root@server.dgavdadaev.net www.dgavdadaev.net]# cd /vagrant/provision/server/
[root@server.dgavdadaev.net www.dgavdadaev.net]# mkdir -p /vagrant/provision/server/http/etc/httpd/conf.d
[root@server.dgavdadaev.net server]# mkdir -p /vagrant/provision/server/http/var/www/html
[root@server.dgavdadaev.net server]# cp -R /etc/httpd/conf.d/* /vagrant/provision/server/http/etc/httpd/conf.d
[root@server.dgavdadaev.net server]# cp -R /var/www/html/* /vagrant/provision/server/http/var/www/html
[root@server.dgavdadaev.net server]#
[root@server.dgavdadaev.net server]# cp -R /var/named/* /vagrant/provision/server/dns/var/named/
cp: overwrite '/vagrant/provision/server/dns/var/named/data/named.run'? y
cp: overwrite '/vagrant/provision/server/dns/var/named/dynamic/managed-keys.bind.jnl'? y
cp: overwrite '/vagrant/provision/server/dns/var/named/dynamic/managed-keys.bind'? y
cp: overwrite '/vagrant/provision/server/dns/var/named/master/rz/192.168.1'? y
cp: overwrite '/vagrant/provision/server/dns/var/named/master/fz/dgavdadaev.net'? y
cp: overwrite '/vagrant/provision/server/dns/var/named/named.ca'? y
cp: overwrite '/vagrant/provision/server/dns/var/named/named.empty'? y
cp: overwrite '/vagrant/provision/server/dns/var/named/named.localhost'? y
cp: overwrite '/vagrant/provision/server/dns/var/named/named.loopback'? y
[root@server.dgavdadaev.net server]#
```

Рис. 11: Копирование конфигураций

## Скрипт автоматизации http.sh

```
1  #!/bin/bash
2  echo "Provisioning script $0"
3  echo "Install needed packages"
4  dnf -y groupinstall "Basic Web Server"
5  echo "Copy configuration files"
6  cp -R /vagrant/provision/server/http/etc/httpd/* /etc/httpd
7  cp -R /vagrant/provision/server/http/var/www/* /var/www
8  chown -R apache:apache /var/www
9  restorecon -vR /etc
10 restorecon -vR /var/www
11 echo "Configure firewall"
12 firewall-cmd --add-service=http
13 firewall-cmd --add-service=http --permanent
14 echo "Start http service"
15 systemctl enable httpd
16 systemctl start httpd
17 |
```

Рис. 12: Содержимое http.sh

## Выводы

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## Итог работы

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- Установлен и настроен HTTP-сервер Apache.
- Настроены файлы конфигурации и межсетевой экран.
- Проведён анализ логов и тестирование работы сервера.
- Реализован виртуальный хостинг для двух доменных имён.
- Подготовлена структура для автоматизированного provisioning в Vagrant.
- Созданы тестовые веб-страницы и проверена корректность их работы.